

## Phase III: Building the Information System

This chapter reviews the basic planning steps in Phase III, Step 2 Data Collection and Inventory - Preparing the Community Assessment and Existing Land Use Map; and Step 3 Data Analysis - Formulating Future Development Scenarios. The aim of this phase of the planning process is to translate the vision statements and growth and development trends of the community into future development scenarios.



*If you don't know where you're going, you might end up someplace else.*

- Yogi Berra

### Step 2: Data Collection and Inventory – Preparing the Community Assessment and Existing Land Use Map

Building an information system for a master plan is like building a three-dimensional model. It should contain sets of data about the past, present, and projected conditions of the community. Maps, charts, graphs, tables, and/or narratives should be used to show what it is like today, and where it appears to be headed in the future. This model will provide a good idea of what the community will look like in ten or twenty years if nothing is done to change current trends. Estimates as to when and where growth will occur and which facilities and services may fall short of demands can be made using this base data.

In the development of an information system, it is important that enough data be collected, but not too much. Data collection can be an overwhelming task. The type, amount, and specificity of the data needed will be driven by the projected contents of the master plan and, to a certain extent, by the topics, issues, and recommendations that are identified in the community visioning phase. In short, you should collect just enough data to describe the community accurately.

As a general practice, contact your regional planning commission for all data and GIS data layers that are available for your community.

To complete the land use section of your master plan, **RSA 674: 2 II. (b)** requires the planning board conduct, at a minimum, the following three studies:

- population
- economic activity
- natural, historical, and cultural resources

Each of the above three studies can be easily accomplished by preparing a community assessment.

**What Is a Community Assessment?** A community assessment is a report used by the planning board and/or master plan advisory committee to promote discussion about the major trends and issues facing the community now and in the years ahead. As a rule, this assessment is the first step of any planning process. It is a working document in which broad trends, rather than a high level of detail, are presented. It provides a snapshot of the most important aspects of a community's population, housing, economic conditions, and natural, historical, and cultural resources. The assessment also draws numerous comparisons to other cities or towns to create context and an understanding of how the community is doing. The idea behind the community assessment is to identify in a report the most important demographic and socio/economic trends facing the community, as well as the important natural, historical and cultural resources in greatest need of protection. An example of a community assessment or trends report can be found at: <http://www.cityofportsmouth.com>.

## Contents of a Community Assessment

### Population Data

The collection of population and demographic information is necessary for three basic reasons: (1) to review past trends; (2) to assess current conditions; and (3) to identify future trends. The important factors to determine about population are its absolute increase and rate of growth, its distribution, and its composition and mobility.

The main sources of available population data are from the US Census Bureau, the regional planning commission, and the New Hampshire Office of Energy and Planning. The US Census Bureau conducts a population and housing census every ten years. The most recent is the 2000 Census. The next census will be in 2010. Census data for your community is available on line at <http://www.census.gov>. It is wise to coordinate a master plan project with the release of US Census data. Thus, the ideal time period to prepare or update your master plan would be between the years 2000 and 2005 (after the most

recent census) or between the years 2010 and 2015 (after the next census). Otherwise the planning board will be faced with either having to rely on census data that is 5 to 10 years old or developing its own population estimates, which could be costly.

Presently, the NH OEP prepares annual population estimates for every municipality in the state, based on a methodology referred to as the "dwelling unit method." This method relies on linking population growth to new dwelling units and is an acceptable approach to estimating between-census-year population counts. The dwelling unit method relies on three primary input variables: (1) the number of building permits issued by a city or town since the last census, (2) the vacancy rate, and (3) a figure for the average number of persons per dwelling unit. However, the vacancy rates and average persons per dwelling are based on the last census and are updated with current Census Bureau surveys, which are not as reliable.

The NH OEP also prepares population projections that attempt to estimate population levels at five-year intervals, twenty-five years into the future. These projections rely on an allocation methodology. Population projections are first prepared for the entire state by working with the US Census Bureau, and then the NH OEP allocates a percentage of the statewide growth to the counties, based on each county's historical share of state growth. It is the responsibility of the regional planning commissions (RPC's) to review the NH OEP population estimates before they are released.

Many RPC's also prepare population projections independent of state projections. Some of these estimates are based on survey work that is conducted to update regional transportation planning models. A variety of different methodologies are employed, but the most common is the "cohort survival method." Unlike the NH OEP method, most RPC's utilize a "bottom up" approach, where each community's population is projected individually and then aggregated into a regional total.

Basic population and demographic data can be obtained from Community Profiles, prepared by the New Hampshire Employment Security, Economic,

and Labor Market Information Bureau. These profiles are updated annually. A profile for each community in the state can be found online at <http://www.nhes.state.nh.us/elmi/communpro.htm>.

Funded by the Community Development Finance Authority, Flash Facts are also available for many communities in the state through the New Hampshire Association of Regional Planning Commissions (NHARPC). These fact sheets can be found online at NHARPC's website, <http://www.nharpc.org>. They are prepared and updated annually by the North Country Council and the Southern New Hampshire Planning Commission. Also online at this site are "Info Sheets" for every community in the state. This data includes census population numbers and projections, historical information, land use information, tax rates, poverty rank, employment statistics, and housing and commuting data.

Tables and maps of 2000 Census data for all geographies, to the block level, can be obtained through the American Fact Finder by accessing online the Census 2000 Gateway. State and county data is also available through State and County Quick Facts and Data Highlights. The Census 2000 Gateway can be found online at: <http://www.census.gov/main/www/cen2000.html>.

Population data should be gathered for the community, neighboring towns, and the county or region, including

- total number of persons in the community or region
- total number of females and males
- total number of households
- total number of people living in group quarters or institutions
- total number of married couples/families
- average number of people and average number of families per household
- median age of the population (Note: the median age is not the average age. Half of the population is older and half is younger than the median age.)
- number of persons by sex and age groups
- educational attainment of the population

## 1) Historical Trends

Population data can be collected and presented in a number of ways. It is common to compare the overall population trends of your community with that of the county, the region, and the state. It can be equally important to compare the population of your community with the populations of neighboring cities and towns, depending upon your community's location relative to other cities and towns, and the migration of people in and out. The key population data needed is as follows:

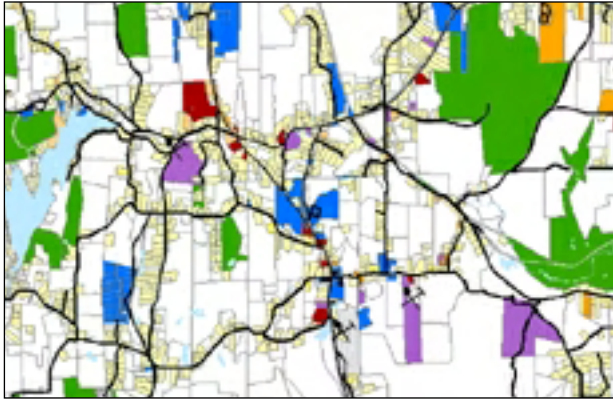
- Total population for the years 1970, 1980, 1990, and 2000 for your community, the county, the region, surrounding towns, and the state (or the four most recent censuses)
- Population projections at five-year intervals, or twenty-five years out, for 2005, 2010, 2015, 2020 and 2025 (for your community, the county, the region, surrounding towns, and the state. Both the NH OEP and regional planning commissions prepare these projections. However, the projections do not get updated between censuses. So, for example, if your town decides to update its master plan in 2007, your community would need to prepare its own population projections starting from 2007 as opposed to 2005 or 2010).

Once this information has been collected, you can prepare a chart or table comparing historical population trends, percentage changes, and annualized percentage rates of growth for your community and surrounding areas. You should also plot the trend lines, both historical and projected, on a graph. If your community is a resort area, collecting and estimating seasonal population data can be a difficult task. A local survey, in addition to the US Census data, may be needed to make an educated estimate.

## 2) Population Projections

Population projections should be shown in five-year intervals, projected out 15 to 20 years into the future. The projections obtained from the NH OEP, as well as the regional planning commissions, are likely to be conservative. Therefore, it is best to develop a third set of projections based on the latest building permit data, using the dwelling unit method and the most

recent census data for average household size and average vacancy rate. Plot all three sets of projections on a graph and compare. A local decision can then be made as to which is most reasonable, based on first-hand knowledge of your community's economic and demographic conditions. As part of this exercise, it is useful to identify the peaks and lows in the trends and to compare the annualized rates of growth in each decade.



If your community is relatively small, making an accurate projection of the population trend can be a difficult task. There are a number of methods available, but a simple one is to plot the population trend on graph paper. Make a small table to compare populations over time, and then plot the population with its corresponding year. After the data points have been connected, the population trend should become apparent. You should fit, or draw, a trend line so that it passes equidistant between the data points. The trend line may then be extended outward for several decades to provide an idea of future populations. Do not assume, however, that past or current population trends will continue into the future. If this method is used, it is best to collect at least 5 to 7 decades past population data (i.e. from 1940, 1950, 1960, 1970, 1980, 1990 and 2000).

Many communities can use the simple trend-line method, rather than the cohort-survival approach, to project population. The community should be small (less than 2,500 people), show either slow growth or decline for the past two decades, and be located far from large towns and cities and resort areas. With the trend-line method, it is assumed that future population levels can be predicted from past trends. In other words, if the community has been losing population

since 1980, it is a fairly safe assumption that the population will either stabilize or continue to decline for several more decades.

On the other hand, if the community is growing, it is important to pinpoint in the trend line the causes of the growth. In communities located within the fringe of larger cities, in-migration could be driving the population upward. If the community is located in a fairly isolated or rural setting, it could be assuming a role as a trade center within the region. Understanding geographic, economic, and regional influences is critical when final population projections are prepared. A small town on the outskirts of a large city will likely continue to grow, quite possibly at accelerating rates, well into the future. The isolated rural community will assuredly either lose population or continue to grow at low rates. Many small towns and rural areas maintain a birth-to-death rate and a migration pattern that allows them to remain nearly constant in size.

Daniels, Keller, and Lapping in *The Small Town Planning Handbook* have identified the following reasons for population growth, fluctuations, and decline in rural areas and small towns:

- change in regional economic structure
- loss of natural resource base
- regional population loss
- shift in trade area patterns
- major changes in transportation routes and patterns
- loss of major employer or gradual erosion of small businesses or firms
- seasonal jobs
- loss of community service capacity
- failure of leadership
- new technological shifts
- development of natural resources
- metropolitan population overspill
- tourism
- gambling and gaming
- recreational resources
- environmental resources
- new transportation patterns
- new business patterns
- regional growth and development

It is important to remember that population projections set the stage for the other chapters of the master plan. Information on current and expected future population is extremely important for planning future housing demand, land use patterns, economic development, and community facilities, particularly schools. Population projections should be carefully researched and population goals and objectives realistic.

If a community is growing rapidly, a goal promoting slower population growth will probably not be met. Similarly, if the population is declining, a goal to promote rapid population growth will sound like nothing more than wishful thinking. For communities with populations between 2,500 and 10,000, the cohort-survival method is recommended because of the availability of census data. Communities with less than 2,500 residents may find that a simple population trend-line is sufficient. The biggest problem in accurately estimating future populations is that in- and out-migration are often difficult to predict. This is particularly true in fast-growing communities.

### 3) Population Composition

There are two fundamental factors to look at with regard to a community's population composition: age and sex. Age is an important factor in determining school-age population, which is found by breaking population census data down to specific cohorts, or age groups. The Census Bureau report entitled Census 2000 Summary File 1 (SF-1) found at: <http://www.census.gov/Press-Release/www/2001/sumfile1.html> contains the number of people by generalized age groups for all counties and communities in the United States and New Hampshire. One need only copy the number of people in each five-year age group from this publication. This report also provides the total population and the total number of males and females in your community. Examples of detailed age cohorts and generalized age groupings are shown as follows:

#### Detailed Age Cohorts

Under 1 year	35 to 39 years
1 to 2 years	40 to 44 years
3 to 4 years	45 to 49 years
5 to 6 years	50 to 54 years
7 to 9 years	55 to 59 years
10 to 11 years	60 to 64 years
12 to 13 years	65 to 69 years
14 to 15 years	70 to 74 years
16 to 17 years	75 to 79 years
17 to 18 years	80 to 84 years
19 to 20 years	Over 85 years
21 to 24 years	
30 to 34 years	

#### Generalized Age Cohorts

Under 5 years
5 to 9 years
10 to 14 years
15 to 19 years
20 to 24 years
25 to 34 years
35 to 44 years
35 to 39 years
45 to 54 years
55 to 59 years
50 to 54 years
60 to 64 years
65 to 74 years
75 to 84 years
Over 85 years

For most master plans, the generalized age cohorts as shown above are sufficient. Even fewer cohorts – such as under 1 to 18, 19 to 29, 30 to 39, 40 to 49, 50 to 59, and 60 and older – may suffice. The detailed age cohorts are helpful when projecting future school enrollment. Age data is important (1) to determine which cohort, or population grouping, is the most dominant within the community; and (2) to develop population projections using the cohort survival technique. A younger population imposes different sets of demands upon the types and provision of services needed within a community than an older one does.

Another important data set is the median age. You can evaluate this data to assess how young or old the population is within your community. It is useful to make median-age comparisons by tracking how the median age has changed over time and how it compares with neighboring communities and the county.

The sex of the population is also important to look at, particularly the abundance or lack of females within the baby-rearing age groups. A large number of females may indicate that a community has the potential for increased fertility rates. Lower numbers in that category mean lower fertility rates.

Some master plans include information about the racial composition of the community's population. This information is useful in assessing how a community is changing ethnically.

#### **4) Population Distribution/Density**

If your community is concerned about increasing land consumption and decreasing buildable land area, data can be collected on the population density of the community, surrounding cities and towns, county, region, and state. Population density is expressed as persons per square mile and is available from the US Census, regional planning commissions and the New Hampshire Office of Energy and Planning. The NH OEP and US Census have also prepared a ranking of communities in New Hampshire based on population, number of housing units, geographic size, and population and housing unit density per square mile. These reports can provide a perspective that may be useful in the master planning process.

#### **5) Population Mobility**

If there is a concern about the out-migration of people who were born within a community, population mobility data can be collected from the US Census. It will provide the percentage of people in the community who occupied the same dwelling unit during the previous census, as well as the percentage of residents who were born in the county or state. By examining these two data sets, the proportion of the population moving in or out of the community, as compared with the county or state, can be identified. This residency data can be obtained from the US Census for the year 1985 from the 1990 Census STF3A file (found at: <http://www.census.gov/main/www/cen2000.html>).

Migration data is also available from the US Census. Migration is commonly defined as “moves that cross jurisdictional boundaries.” In-migration is migration into an area during a given period. Out-migration is migration out of an area during a given period. Net migration is the difference between in-migration and out-migration. A positive net, or net in-migration, indicates that more people moved into the area than moved out during that period. A negative net, or net out-migration, means that more people moved out of the area than moved in. The US Census Bureau only recently (August, 2003) issued migration data for states, regions, counties, and municipalities between the years 1995 and 2000. The NH OEP data center at: <http://nh.gov/oep/programs/DataCenter/index.htm>, has prepared a spreadsheet showing the differences for in-migration for persons aged five years or older.

#### **6) Other Socioeconomic Indicators**

Other important demographic information that should be presented in your master plan is the total number of households and families and average household and family size. Per-capita and household income, poverty status, school-age population or school enrollment data, and educational attainment levels can also be included.

Once all of this information has been collected, it should be put into tables, charts, and graphs that depict the growth trends and important socioeco-

nomic indicators of the community. Is your community's population growing or declining? Does your community contain a younger population with more families than neighboring towns? What percentage of the population is over the age of sixty-five? Has the community's school-age population been increasing or decreasing, and what is it expected to do in the future? Is the community's population becoming more ethnically and racially diverse? Has the average household size decreased? What percentage of the population is living above or below the poverty thresholds? How does the community's median per capita income compare with other communities in the county? What percentage of the population has graduated from high school or college? These are the types of questions that should be addressed as part of a population study.

## Housing Data

Much of the community's housing data can be obtained from the same sources as noted above, including the US Census, the NH Department of Employment Security's *Community Profiles*, and the New Hampshire Association of Regional Planning Commissions' *Info Sheets*. It is important, however, that housing data for a master plan also be collected from municipal building permit records because housing construction trends tend to mirror population growth rates and changing economic conditions.

The total number of residential building permits by housing type issued each year provides an illustration of housing construction trends within a community, as well as changes in housing mix. If the number of building permits issued over several decades is tracked by a community, the cycles, the highs and lows of housing construction, will become apparent. Generally these cycles closely parallel economic conditions. By carrying this housing trend-line out into the future and combining that projection with an estimated average number of persons per household and an estimated vacancy rate, a reasonable alternative population projection can be derived. National data modeling companies such as Claritas, Inc. can be contacted to obtain estimates of future household size and vacancy rates for your community. As reported by the US Census, the average household size across the country has been declining for the past

several decades. The New Hampshire Housing Finance Authority estimates that the average household size in 2010 will be 98% of the 2000 average.

You can also calculate the average increase in new residential construction over the time period of the building permit data. This average number of new units is useful as you begin to project the future number of new housing units, and as you begin to conduct a build-out analysis of the community (the build-out analysis is discussed in Chapter 10, "Tools and Techniques"). A review of dwelling unit projections is provided in the following sections.

The housing data that should be gathered for your community, neighboring towns, and the county includes

- the total number of housing units
- the total number of housing units by type (single-family, multi-family, manufactured housing)
- the age of housing stock (the year a structure was built)
- the total number of residential building permits issued annually for the past ten years
- the percent of housing that is renter-occupied and the percent owner-occupied
- the median value of all owner-occupied housing units
- the average purchase price of new and existing homes
- the median gross rent for one and two-bedroom apartments
- the fair share formula from regional housing needs assessment

### 1) Historical Trends – Housing Supply and Mix

Housing data can be collected and evaluated in a number of ways. It is common to compare the overall housing trends of a community with those of the county, the region, and the state. It can be equally important to compare the housing in your community with that of neighboring cities and towns. This decision depends upon the location of your community relative to other cities and towns and the amount of new housing growth in the general area. The key housing data you will need is as follows:

- The total number of housing units (both year-round and seasonal) from the last four decades of the US Census (1970, 1980, 1990, and 2000, at the time of this publication) and the percent change between these years for your community, surrounding towns, county, region, and state.
- The total housing units by type (single-family, multi-family, manufactured housing) for the last two decades of the US Census (1990 and 2000) and the corresponding percentages of the total number of housing units for those years.
- If your community is located in a resort area, the total year-round and seasonal housing units for your community, surrounding towns, the county, the region, and the state for the last two decades of the US Census.
- The total number of residential building permits issued in the past twenty years by housing type and the percent change for each year.
- Additions to the housing supply of your community by housing type, from the date of the last US Census to the present, based on the total number of residential building permits issued by housing type each year for which records exist.

Once you have collected this information, you can prepare a number of charts or tables comparing the community's historical housing trends and percentage changes of housing growth with those of surrounding areas. If your community is a resort area, you can also show the number of year-round and seasonal housing units. All of this information is available from the US Census and the NH OEP, as well as from your municipality's building permit records.

## **2) Housing Characteristics – Occupancy, Tenure, and Age**

The number and types of housing units in your community are as important as the overall characteristics of the housing stock. Three key pieces of data are related to housing characteristics – occupancy status, tenure, and age. Occupancy status is shown as a percentage of total housing units based on the number of owner-occupied and renter-occupied units. You should compare these percentages between 1990 and 2000 to determine if they have increased or

decreased, as this gives you an idea of which type of housing is more popular or locally accepted.

Housing tenure refers to the difference between owner-occupied and rental housing. This is shown as an overall percentage of the total housing stock. Larger cities might have a higher percentage of rental housing, while smaller surrounding towns might have a much higher percentage of owner-occupied housing.

You should also compare the vacancy rates for both owner-occupied and rental housing. A higher vacancy rate for either owner-occupied or rental units might be explained by there being less demand for this type of housing. Conversely, a lower vacancy rate for either rental or owner-occupied units might mean that there is a very tight market and that development pressure for that type of housing remains strong within your community. Ideally, your community planning should work to create a balance between housing supply and demand.

Knowing the age of the community's housing stock is important in properly assessing its health and adequacy. The age of the housing stock in a community is typically shown as a percentage of the year the structure was built. Some communities have many historic homes, while other communities may be comprised mostly of newly constructed homes. Age alone cannot be relied on to indicate the quality of housing stock; however, very often homes built circa 1900 are in much better condition and of higher quality than those of the 1950s through today.

For indicators other than age of the overall condition of the community's housing stock, you can use the information compiled by the municipal property tax assessor/appraiser or conduct a visual housing survey. For most communities, a visual survey would be time-consuming and expensive. Therefore, it is not recommended, unless the planning board wishes to address this issue as part of a more detailed neighborhood plan.

## **3) Housing Costs and Affordable Housing**

You can use the median value of owner-occupied

homes and the median gross rent of rental units to compare the housing costs of your community with surrounding towns, the county, and the state. This data is available from the US Census. For regional sales and rental rates, contact the New Hampshire Housing Finance Authority, which conducts an annual survey of gross rent by county and metropolitan area across the state (**Click here for web site: <http://www.nhhfa.org/>**). You can also contact your regional planning commission or local real estate board to obtain information about the number and average sales price by type of unit for your community and surrounding towns. This information is helpful in showing how your community fares compared with other towns in the regional housing market.

Affordable housing is often defined as housing for individuals or families with low and moderate incomes where the cost does not exceed roughly 30% of their gross income. For planning purposes, it is useful to estimate the total number of affordable housing units needed in your community. In fact, RSA 674:2 III. (a) recommends that a master plan include a housing section that assesses local housing conditions and projects for residents of all ages and income levels in the community and region. This local assessment should be based on the regional housing needs assessment prepared by the regional planning commission pursuant to RSA 36:47, II. You should first obtain, from the US Census, the average of monthly home ownership costs and gross rent as a percentage of household income for your community. You may be surprised to see how high these percentages are. As a general rule, housing costs should not exceed 30% of gross monthly household income. Compare this information with surrounding towns, the county, and the state to see how your community ranks.

Contact your regional planning commission to ascertain your community's fair share of regional low-to-moderate-income housing needs. As previously stated, each planning commission has conducted a fair-share housing needs assessment to determine your community's proportionate share of regional growth and its "fair share" of low- and moderate-income housing, expressed as the total number of low-to-moderate-income housing units that should be provided within your community for

a ten year period. Credits may be granted to adjust the fair-share number downward, as low-to-moderate housing is built in your community. This number is then put into your master plan as your community's fair-share affordable housing goal. While affordable housing does have a significant impact on a community's tax base, each community should demonstrate a willingness to accept its proportionate share of regional growth and its "fair share" of low-to-moderate-income housing, so that no one community is overburdened.

#### 4) Dwelling Unit Projections

Housing projections are important because the total number and types of new units will largely determine how your community will look in the future. In addition, the raw numbers can be used to predict how much land will be needed for future residential development. Your community can then plan accordingly with regard to the location of this new development. Several methods for creating projections can be used.

A simple technique used to project future housing is to divide the projected annual population by the projected average household size for each projection period to determine the number of new households. This calculation should be performed in five-year increments over a 10- to 20-year period. The resulting number of projected new households in each five-year increment will require one additional new dwelling unit to be created. The next step is to determine what percentage of single-family, multi-family, and manufactured home construction will occur in the future, based on your community's past housing construction trends and your knowledge of pending and future projects. The projected number of new households in each five-year increment is then multiplied by the percentage of each housing type. The net increase in each type of housing can then be added to the base year stock.

However, the above method does not take into account vacancy rates, the need for replacement units, or the need to consider other factors that could affect housing construction. To expand upon the above method, you can take a look at your community's housing trends and make several assumptions.

For example, you might assume

1. The New Hampshire Housing Finance Authority's projection that the average house hold size in 2010 will be 98% of 2000 means that the average household size in your community will decline .025 or .03 persons per household for each projection period (i.e. 2005, 2010, 2015, 2020), from 2.53 in 2000 to 2.51 in 2005 and 2.48 in 2010, equaling a 1% decrease every five years.
2. Your community's institutional population (that portion of the population living in dormitories, nursing homes, and other institutional settings) will remain at year 2000 census levels into the future.
3. A 3% vacancy rate will be maintained in the future, to allow for expected movement in and out of your community (the NHHFA defines normal as 1.5% for ownership and 5% for rental).
4. According to the NHHFA, generally 1.7% of the base year stock equates to ten years of replacement units. Thus, 0.17% of housing stock annually will be needed to replace existing housing units that are demolished or destroyed by other causes, such as fire or flooding.
5. No major social, economic, or other unforeseen events will occur that will significantly impact your community's growth and development in the future. If such events occur, adjustments can then be made in accordance with the perceived impact assessed at that time.

Based on the above assumptions, you simply divide the total population projection by the projected average household size for each projection period, multiply the resulting estimated number of housing units by 1.03 to provide an allowance for your vacancy rate, and then multiply by 1.0085 per projection period as replacement housing to derive the total number of projected units. Then subtract from the total projected housing your current housing stock to get the number of additional housing units needed for your community in the future.

If you want to break down the types of housing from the projected totals, you can use the same approach as in the first method and back out these numbers based on the percentages of single-family, multi-family, and manufactured housing that you have estimated for each projection period.

Caution is warranted, however, in evaluating these or any projections. They should be viewed as more of an order-of-magnitude estimate of the size of your community's housing stock in future years, and not an exact number of units to be anticipated.

## Economic Data

At a minimum, economic data should

- describe existing economic conditions
- demonstrate the community's ability to support business by identifying its assets and liabilities
- recommend ways to strengthen the economy
- give direction to local officials as to how, what, and where economic activities should take place in your community

Data collection is the first step. Much of the data you will need can be found in the socioeconomic characteristics compiled in the *Census of Population* published by the US Census, as well as in the published reports of the NH Department of Employment Security (NH DES). Additionally, you should check out the NH DES's *Community Profiles*, and NHARPC's *Info Sheets*. Information about your community's tax base and finances can be obtained directly from your city or town government. The key data that should be collected for your community, the county, and the region is as follows:

- Current economic conditions – employment and number of business establishments by each major industry between 1990 and 2000 and to the present. Major industries include: services; transportation, communication, and utilities (TCU); agriculture; retail trade; manufacturing; finance, insurance, and real estate (FIRE); wholesale trade; mining; construction; and government.
- Labor force – unemployment rates from 1990 to present, commuting patterns (travel time to work and place of work), and occupational data.
- Land development patterns – commercial and industrial building square footage; assessed value, both non-residential and residential; and acreage.
- Municipal financial trends – tax rates, expenditures, revenues, and assessed valuations.
- Economic development trends – at-home businesses, technology, special economic areas/assessment districts, and business clusters/parks.

If you are preparing an economic development chapter in your master plan, you should use the above data to address the following topics:

#### A. Historical Context

1. What natural attributes have contributed to the local economy?
2. What major factors have influenced the local economy?
3. What types of jobs have people held in the past?
4. How was land used in the past?

#### B. Current Economic Conditions

1. What best describes the overall characteristics of the economy in your community (agricultural, industrial, retail, services, tourism, etc.)?
2. How many and what types of business establishments exist in your town? Which industries are growing and which not growing?
3. Are there particular products made in town? Are there related transportation and/or handling considerations?
4. Where is the greatest number of jobs? Which industry type has the greatest number of employees and which the least?
5. How many home businesses and/or home occupations are there in your community? (You can usually obtain this data from the assessor's records; additionally, a number of private companies maintain a database of telephone listings that could be mapped using geographic information systems, or GIS.)
6. What are the prevailing local economic issues?

#### C. The Local Labor Force

1. What is characteristic about the local labor force? Distinguish by economic sector, occupation, and the like. What are the average wages earned? What is the median household income and per capita income, and how does this compare with neighboring towns? What percentage of the community's population have incomes that fall below poverty level? Has this improved over time?

2. How many people are employed in your community? What are the employment trends by industry group?
3. How do people travel to work? Where do people live in relation to their work? What are the commuting patterns in your community?
4. What are the unemployment trends?

#### D. Local Business Support Services

1. Identify the kinds of support services your community can offer to promote business development (e.g. transportation facilities and services, public facilities and utilities, suitable land with good access, land zoned for business, industrial/office parks, and vacant buildings).
2. Identify other service-oriented support services, such as schools, training programs, and banking.

#### E. The Regional Economy

1. Describe how your community fits in with other communities in the region. Is your town a bedroom community, for example?
2. Identify and describe local assets and liabilities.
3. Describe how your community compares with other communities in the region in terms of number of jobs, types of employment, and available new commercial/industrial building space.
4. Forecast number and types of jobs and compare with neighboring towns, the region, and the state (employment projections can be obtained from the New Hampshire Department of Employment Security and your regional planning commission).

#### F. Economic Potential

1. Identify land development patterns, including land use controls and zoning.
2. Describe community development, including capital improvements, water and sewer, and transportation.
3. Offer suggestions for creating a better business environment.
4. Provide a summary and recommendations.

## G. Municipal Finances

1. Identify and describe current and historic trends in total assessed valuations, both residential and non-residential; tax rates; expenditures; revenues; and what budgetary implications these have for the community.
2. Identify and describe how the community's tax burden is shared by various land uses, such as residential and non-residential, agricultural, and public utilities uses.
3. Compare equalized valuations, per capita income, equalized tax rate, and the state rank of your community with neighboring towns. How does your community's equalized valuation compare to the state as a whole and to neighboring towns on a per capita basis?
4. Identify the impact of exemptions on tax structure. Which exemptions make up the top of the list?
5. Compare general fund budget increases for consistency with community growth rates, development patterns, and real estate values.
6. Identify long-term debt and compare with capital expenditures. Describe capital reserve funds. What percentage of public funds is expended for capital improvement projects? Are expenditures above or below annual operating budgets for purchase, construction, or replacement of physical facilities in the community? Is demand for community facilities growing within the community?

## Natural Resources

The collection and presentation of data concerning a community's natural environment is essential to all master plans. The natural resources inventory provides the data upon which most master plans are based (see Natural Resources Inventories, A Guide for New Hampshire Communities and Conservation Groups, Revised and Updated by UNH Cooperative Extension, 2001). Most of the information required for a basic inventory may have already been collected and mapped for your community by your regional planning commission using the data from GRANIT. Some County Soil Survey data may not be available in digital format for use with GIS. For additional information on up-to-date listing of data layers visit GRANIT at <http://www.granit.sr.unh.edu>.

GRANIT is New Hampshire's Statewide Geographic Information System which is maintained by the UNH Complex Systems Research Center.

After you have reviewed the data layers available through GRANIT, you may find that your community does not need to undergo the expense of developing a full-blown natural resources inventory; a basic inventory may be adequate. The key natural resources data that you should collect and present in written, graphic, or map form as part of this inventory includes

- A description of the **topography and geology** of your municipality, noting elevation ranges above sea level; hilly terrain; irregular relief and slope; prominent hills and hillsides; geologic features; bedrock outcrops; and generalized surface deposits. Most of this information can be obtained from the USGS maps prepared for your community (see available USGS resources on-line at: <http://mapping.usgs.gov/partners/viewonline.html>, or contact your regional planning commission).
- A **generalized soils** description and map based on your County Soil Survey, as published by the USDA Natural Resource Conservation Service, formerly known as the US Soil Conservation Service (this information can be found on-line at: <http://www.nh.nrcs.usda.gov/> and also at your local NRCS office).
- A description and map of **prime farmland soils** as identified by the US Natural Resource Conservation Service – prime farmland soils, soils of statewide importance, and soils of local importance (this can be obtained from GRANIT as a data layer).
- A **soil conditions** map, noting soil limitations and development constraints; hydric soils; seasonally wet soils; shallow-to-bedrock soils; sandy-gravelly soils; existing, restored, or abandoned gravel pits; and prime farmland soils based on County Soil Survey descriptions and slope.
- A **slope** map showing slopes less than 5%, 5% to 10%, 10% to 15%, 15% to 20%, 20% to 25%, and over 25%, based on available topography and contour data.
- A description and map showing **water resources**, including watershed boundaries; surface water (lakes, ponds, and major rivers); groundwater; and

wetlands. A statewide inventory of all surface water features is available through GRANIT GIS. You should also include a stratified drift aquifers map, as well as a map of all public lands, which may be included in a groundwater conservation district or a well-head protection area. All stratified drift aquifers in the state have been mapped with accompanying reports and published by the USGS (NH) and the NH DES. Information about and locations of public wells and active drinking water supplies is available from GRANIT GIS.

- A **wetland** description and map. Wetland information varies from agency to agency within New Hampshire and the federal government. For planning purposes, the most widely used soil descriptions employed by the US Natural Resources Conservation Service comprise the hydric soil category, or the poorly and very poorly drained soils, as identified by the county soil survey. Wetlands have also been defined and mapped statewide on the GRANIT system using the criteria of the US Fish and Wildlife Service through the National Wetlands Inventory Program (NWI). The NWI website can be found at: <http://www.nwi.fws.gov/>. In addition, for of managing and permitting activities in wetlands that are of state interest, the NH Wetlands Bureau (website: <http://www.des.state.nh.us/wetlands/>) has adopted the 1987 US Army Corps of Engineers publication, Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1.

- A description and map of all **special flood hazard** areas (100-year floodplain and floodway boundaries and elevations) based on the Flood Insurance Study of your community, which is prepared by the Federal Emergency Management Agency (FEMA). If you include a natural hazards chapter in your master plan, this map should be provided in that chapter, as well as a description of any other natural constraints. Special flood hazard areas can be obtained for many communities from GRANIT. Also see the NH Floodplain Management Program at: <http://www.nhoem.state.nh.us/NFIP/homepage.shtm>.

- A description of all **potential contamination sources** close to water resources. The Hazardous Waste Management Division at NH DES (see: [http://www.des.state.nh.us/ORCB/doclist/MTBe\\_and\\_other Contamination\\_Sites\\_List.pdf](http://www.des.state.nh.us/ORCB/doclist/MTBe_and_other Contamination_Sites_List.pdf) main-

tains a statewide inventory by town of all sites with hazardous wastes that may pose a threat to water resources. This information can be described and mapped. In addition, GIS coverage of all National Pollution Discharge Elimination System (NPDES) Outfalls can be obtained from the NH DES Wastewater Engineering Bureau at: <http://www.des.state.nh.us/wwe/>.

- A description and map of all **special resource areas**, including wildlife, rare species/exemplary natural communities, and riparian buffer zones. The New Hampshire Natural Heritage Bureau (NH NHB), previously known as the Natural Heritage Inventory (NHI), maintains a list of all rare plants and endangered species in the state (See NH NHB at: <http://www.nhdf.org/formgt/nhi-web/>). Upon submittal of a request form, the NH NHB will provide a map illustrating their general locations. GIS coverage is also available by special permission through DRED, Division of Forests and Lands, and GRANIT.

- A description and maps of all **natural/cultural resource protection priorities** (REPP). This information has been collected by your regional planning commission for most of the municipalities in the region. It includes a breakdown of natural/cultural and scenic resources that have been identified by the municipality (primarily your conservation commission) as priorities for protection. This information is important because it enables you to identify easily lands of special importance and unfragmented open space as well as to shape your community's future land use plan. GIS coverage is available from RPC's and NH DES.

- A description and map of **conservation and public lands**. By definition, conservation lands are properties that are primarily undeveloped and protected from future development. Conservation lands are mapped for the entire state by the Society for the Protection of New Hampshire Forests (SPNHF) (see web page at: <http://www.sphhf.org/research/>) in cooperation with the NH OEP and UNH Complex Systems Research Center. If your community has prepared, or is in the process of preparing, an open space plan, you should also include any maps showing unprotected open space and areas proposed for open space protection. GIS coverage is available from GRANIT.

- A description and map of **forest lands**. It may be difficult to find a complete inventory of the forest lands in your community, but you can highlight these areas with the use of aerial photographs showing your community's conservation lands, tree preserves, and town forests. Statewide aerial photographic coverage is also available from flights made at about ten-year intervals, starting in the early 1950s. County Farm Service Agency offices have the most current USDA aerial photographs with coverage for their respective counties at a scale of 1" = 660'. They allow public viewing and provide order forms and purchasing information. Reproductions can be ordered in a number of scales, ranging from 1" = 4,833' to 1" = 200'. Aerial photographs can also be purchased through your county conservation districts. Orthophotoquads are available in black and white or color infrared at the 1:24,000 scale through the USGS at 1-888-ASK-USGS or through the website <http://mapping.usgs.gov/esic>. Orthophotoquads are also available in digital format through GRANIT GIS for certain areas of the state. GRANIT also has GIS coverage of the "land cover assessment 2001."
- A description and map of available **construction materials**. This information should be included in your environmental inventory, but if you plan to include a construction materials chapter in your master plan, it should be addressed separately under that chapter of the plan and include data on road fill, sand and gravel deposits, and topsoil, plus any areas of active, restored, or abandoned sand and gravel pits. This data is available from your County Soil Survey.

well as development constraints, can be identified, evaluated, and mapped. This information is important because it is critical to the shaping of your future land use plan and must precede the next phase of the master planning process, building the plan. The following table is provided to help you with the data requirements for each of the maps recommended herein. In lieu of preparing all of these maps, you may choose to combine them, or to include only the two summary composite maps in your plan.

Once you have collected and mapped the above information, the next step is to prepare two summary composite maps: a map of environmentally sensitive areas and a map of natural and community hazards. These maps serve two purposes: (1) to identify all the areas within your community that are currently protected, or should be protected, from development because of their environmental and natural resource value; and (2) to identify all the natural or disturbed areas within your community that should be avoided due to the hazards or constraints they pose for development. When the two composite maps are combined, development opportunities, as

## Natural Resource Inventory

### Recommended Maps and Associated Data Requirements

MAP TITLE	DATA REQUIREMENTS
Topographic Map	General contour lines with 20 feet intervals, elevation, and watershed boundaries are available from USGS Quads and GRANIT. This information can be shown on your road base map.
Generalized Soils Map	Based on general soil map units, as shown in your County Soil Survey (typically 8 to 10 units). This information may not be available as a GIS layer from GRANIT.
Prime Farmland Soils Map	Based on soil unit attributes supplied by the NRCS County Soil Survey. May also be supplied by GRANIT.
Soils Conditions Map	General soil map units grouped into four categories: wetland (hydric) soils; seasonally wet soils; shallow-to-bedrock soils; and sandy-gravelly soils. This map can also show prime farmland soils and existing, restored, or abandoned gravel pits. A GIS layer may be available from GRANIT.
Slope Map	Requires contour intervals of at least five feet. Slope percentages maybe either derived from contour data for your municipality or using the soil attribute data available from GRANIT. Use a gradient of colors from light tan (less than 5%) to red (over 25%) to highlight the soil percentages. It is possible to map steep slopes of 15% - 25% and over 25% using this data.
Water Resources Map	Surface waters (lakes, ponds, and major rivers) can be shown on your base map. This information is available as a data layer from GRANIT. Groundwater resources can be shown on a separate map, including well-head protection areas and groundwater conservation districts. Stratified drift aquifer data is available from GRANIT.
Wetlands Composite Map	Both National Wetlands Inventory (NWI) and Hydric Soils (Hydric A and B Soil) data should be available as GIS layers from GRANIT. If not, you may need to conduct a wetlands survey. If your community has designated prime wetlands using the New Hampshire method, these areas should be shown. It is possible to highlight significant wetlands by mapping your community's prime wetlands, wetlands designated as palustrine emergent marsh (PEM) on the NWI maps, wetland complexes made up of a combination of wetland vernal pools and a cluster of small wetlands in one area, and large wetland areas of significant value.
Special Flood Hazard Map	Based on 100-year floodplain and floodway data, as shown on your community's FEMA maps. This should be available as a GIS layer from GRANIT. Flood elevations may be necessary. This data may be combined with your water resources map.

Drinking Water Resources and Potential Contamination Sources	This map can be generated by the NH DES for New and Potential Hampshire towns. The NH DES supplied each town with a copy of this map in 1999. Updated copies may be obtained from NH DES based on watershed or municipal boundaries. This data is available as a GIS layer from GRANIT.
Lands of Special Importance	Prime farmland soils; soils of statewide significance; and rare, threatened, and endangered plant and animal species and plant communities (NHI). Other important natural resource features: scenic areas and designated scenic roads, unique topo-geologic resources, and archaeological and historic sites. Most of this information has been compiled as part of your community's natural resource protection priorities and is available as a GIS data layer from your regional planning commission.
Conservation & Public Lands	Information on publicly-owned (federal, state, and municipal) and privately-owned (fee simple ownership, land trusts, and easements) lands that are protected from development for conservation, forest, or recreational use is available as a GIS layer from GRANIT. Conservation lands are mapped by the SPNHF. This data is dependent upon accurate tax map information. GRANIT is creating a conservation lands registry to help communities regularly add updated information.
Forest Resources	Managed forest lands (tree farms) data is not available from GRANIT, but can be obtained from your local cooperative extension office. Once collected, it must be digitized for use with GIS. Data is available from GRANIT on "unusual forest communities" that have been identified by the NHI. Important Forest Soil Group Maps are available from the Natural Resources Conservation Service. For site-specific and detailed vegetation data, field work may be required.
Construction Materials	Based on soil unit attributes supplied by the NRCS County Soil Survey or GRANIT. Information about existing, restored, and abandoned sand and gravel pits can be obtained from the NH Department of Revenue Administration, which keeps a record of all sand and gravel pits that are exempt and permitted under RSA 155-E. This information is also available from your local tax assessor's records.
Map of Environmentally Sensitive Areas	Composite wetlands; surface waters (lakes, ponds, rivers, and streams); riparian buffer zones; aquifer recharge areas; stratified drift aquifers; well-head protection areas and/or groundwater conservation districts; prime wetlands; prime farmland; publicly owned conservation lands; privately owned protected lands; conservation easements; forest resources; and lands of special importance.
Map of Natural and Community Hazards	Special flood hazard areas; disturbed lands/gravel pits; potential contamination sources; soils with severe development limitations; geologic hazards; steep slopes (>25%); other hazard areas.

## Historical and Cultural Resources

Information about the cultural and historical resources of your community is a basic and important element of all master plans. You can contact your local historical society and the State Historic Preservation Office (<http://www.state.nh.us/nhdhr/>) for information about important sites and structures. If your community has already conducted an inventory or survey of historic sites, you can reference and include this information in your master plan. This inventory not only identifies the important historical resources in a community, but often provides the location, date, historic name, and brief description of the resource. Such a survey is often needed to list historic sites, buildings, or districts on the National Register of Historic Places (see <http://www.cr.nps.gov/nr/>), as well as to establish local historic districts.

When possible, historic and cultural sites should be ranked according to their importance and benefit to the community. Critical rankings may indicate that an important historic site is in danger of destruction and/or that it would benefit the community to have it protected immediately. Another area of interest is business district and storefront renovation. The New Hampshire Main Street Program offers communities an opportunity through historic preservation and business retention and development strategies to make their downtowns attractive places to visit, work, and shop (for more information see [www.mainst.org](http://www.mainst.org)). Federal investment tax credits are available for the renovation of commercial buildings that are historically significant or are listed on the National Register of Historic Places.

You should use all of this information to prepare a map of your community's cultural and historical resources, noting which sites are listed on the New Hampshire Register as well as the National Register of Historic Places, and which sites may be eligible for listing or inclusion as historic districts. Much of this information may already be mapped for your community and can be obtained as GIS coverage from your regional planning commission. A GIS layer showing historic and cultural information about your community may also be available through GRANIT.

Along with a map, you should also prepare a written description of your community's current historic preservation efforts, issues, and future needs. This information can be combined with the natural resources chapter, made part of an overall preservation/conservation chapter, or become a separate historical and cultural resources chapter.

## Completing Your Community Assessment

Once you have collected and mapped the above information, the next step is to prepare your community assessment report. This report does not have to be comprehensive, but it does need to highlight the major trends within your community and summarize major findings and changes. It should be organized to reflect the chapters that you plan to include in your master plan and the amount of data that will be presented.

**Helpful Hint:** *Collect only the relevant data that best summarizes and highlights the key points and issues that you need to identify and discuss in your chapters. Once you have completed the community assessment, you should present the report to your master plan advisory committee and the planning board for review and discussion. Compare the results of your community assessment with your vision statements. Look for areas of similarity between the data and the vision statements.*

## Land Use

The collection of existing land use data and the preparation of land use maps are essential steps in the master planning process. As noted earlier, the land use chapter forms the backbone of the master plan. This is the section upon which the other sections of the master plan are built and that helps the community decide how and where it should grow and develop in the future.

Your aim in preparing the land use chapter is to present an inventory and map of the existing land use patterns of the community; to describe the land development trends of the community; to set goals and objectives for the types and locations of future development; and to develop a future land use map that depicts the locations of both current land uses and desired future development.

Once you have completed your community assessment, the next step is to evaluate the current land use patterns of your community and identify future growth and development possibilities. These future growth and development scenarios should be shown on draft land use maps. In the process of building a master plan, the scenarios are evaluated and a preferred land development scheme selected. Ideally, this scheme should be compatible with the general character of the community and the community's overall goals and visions. Once it has been selected, the preferred land development scheme essentially becomes the future land use map for your community.

### 1) Collection of Land Use Data

An existing land use study begins with the identification, location, and mapping of land use in a community. The identification and collection of existing land use data can be accomplished in a number of ways: (1) by conducting a “windshield survey”; (2) by utilizing tax assessor's records and tax maps; (3) by interpreting aerial photography; or (4) through a combination of the other three approaches. A combination of the first three approaches is perhaps the most cost effective and efficient means of collecting land use data, particularly if you have GIS capabilities.

Land use data for your community may be available from your regional planning commission or the New Hampshire Department of Transportation (NH DOT) as part of a regional or statewide transportation planning model. Many of these transportation models are based on land use data that has been collected and coded by traffic analysis zones.

If you need to conduct a field survey to collect new data or to verify existing data, much of the required field work can be accomplished by volunteers. Two-person teams are generally the most effective: one person can drive while the other records information on a work map. This is what's known as a “windshield survey,” and it is often the easiest and quickest method of collecting data.

Preparation is needed before the windshield survey is begun. Travel routes should be plotted; if more than one survey team will be involved, decisions should be made designating the areas to be surveyed by each team. Necessary supplies and materials must be

obtained and arrangements for transportation coordinated. Paper prints of the community's base map, topographic map, or tax maps are normally used in the field. As land uses are identified, they are recorded on a work map in color code, by symbol, or in some other suitable manner. These field notes should then be transferred to a clean map – a second work map – as soon as possible after the survey teams return from the field.

Aerial photographs of the community are also helpful at this point. They can be used to check field work, verify the extent of areas used for specific purposes, and identify uses in areas that are difficult to reach or see from the road. The existing land use map can be prepared in final form after the second work map has been checked for completeness and accuracy.

In conducting your windshield survey, it is not necessary to record individual land uses on a parcel-by-parcel basis. This approach could be time consuming, depending upon the size and number of land parcels in your community. One way to reduce the amount of survey work is to utilize existing tax parcel records. Typically, each parcel record contains a land use code with an associated building value. If a parcel is coded as residential with a building value, it is generally an occupied residential lot. If the lot does not have a building value, then it is most likely vacant. One of the major advantages of using the tax assessor's database is that it can be imported into GIS and land use maps made from this information. The most common GIS formats for mapping this data are Arc Info and Arc View.

**Helpful Hint** *When you utilize your community's tax assessor's database and tax maps to import data into GIS format, you should first compile a composite tax map of your community. This can be done by combining individual tax map sheets, which involves an editing process called rubber sheeting (overlaying each sheet until they match). Once you have the composite tax map prepared, make any necessary updates and key in the appropriate assessor attribute data for each lot (land use code, zoning, and acreage). You now have a fairly reliable GIS database with which you can generate land use maps, both existing and future. The final step is to verify the data with spot field survey checks. Typically, you will want to verify all the commercial and industrial land parcels to make sure they have been coded properly in the database.*

## 2) Preparing Your Land Use Maps

There are many different, specific land uses, but it is not necessary for planning purposes to record and map all of them individually. The process should begin with the development of a land use classification system that groups individual uses with similar characteristics into several basic categories. Large communities typically use the Standard Industrial Classification (SIC) Manual to classify land use (for more information, go to <http://www.osha.gov/osh-stats/sicser.html>.) For most small New Hampshire communities, the following land use categories are adequate:

1. Residential
  - Single-family
  - Two-family
  - Multi-family (three or more families)
  - Manufactured homes
2. Commercial
3. Industrial
4. Public/Quasi-public (publicly owned land and buildings, schools, and churches)

5. Institutional (hospitals, clinics, nursing homes, medical offices, and the like)
6. Vacant or open land (undeveloped land, including agricultural land and forests)
7. Mixed use land (such as commercial and residential on the same lot)
8. Surface water

Street right-of-way is generally excluded, but it can be included if the data is available. The above land use classification system can easily be expanded or modified if necessary, depending upon the level of detail you need to describe your community adequately. For example, agricultural lands, woodlands, and forests can be shown as separate categories. Industrial land can be divided into light and heavy industry, warehousing, and wholesaling. It is also helpful to include the notation of special points of interest within your community, such as the town hall, schools, hospitals, scenic areas, and special recreational areas. A number of land use types cause classification problems; here are some examples and solutions.

Use	Suggested Classification
Lumberyard	Commercial
Sawmill	Industrial
Lumberyard/Sawmill	Record dominant use or both uses separately
Sand and gravel mining	Industrial (light or heavy, depending on size of operation)
Shoe manufacturer	Industrial (light)
Granite quarry	Industrial (heavy)
Woolen mill	Industrial (heavy)
Craftsman (at home)	Residential (unless it is a large enterprise – then industrial or commercial)
Business offices	Commercial
Amusement park	Commercial
Greenhouse	Agricultural
Nursery/Florist	Commercial

Once you have developed a classification system, you can use GIS to prepare your existing land use map from the tax assessor's records and your field surveys.

### 3) How to Prepare an Existing Land Use Map

A hands-on description of how to prepare an existing land use map is provided below.

1. Materials – Obtain paper prints (on heavy paper) of your community's base map, preferably without topography. The base map can be a blue-line or black-line copy, with plenty of extra space for notations. The following information should be shown on this map:

- roads, streets, highways, and railways (with names)
- lakes and major wetlands (with names)
- rivers, streams, and creeks (with names)
- utility rights-of-way (such as power lines)
- names of points of high elevation (such as mountains and hills)
- names of villages, crossroads, and settlements within the community
- name of municipality and a north arrow, scale, and preparation date
- tax parcel and lot information

The base map should be folded carefully, so that portions of the map can be referred to easily, and the exposed portion is of manageable size. A large handheld clipboard makes a convenient writing surface. The individual who is to record information should have pencils, an eraser, an engineer's scale, a list of land use classifications, and a small pencil sharpener (example land use classifications and associated color codes are shown on the following page).

2. Tax Maps – The community's composite tax map, if completed, or a series of individual tax maps, provide valuable information for use in the field survey. The land use survey team may find it easier to use paper prints of tax map sheets as work maps, since property ownership lines often help delineate use areas. (If overlay sheets are developed during preparation of the future land use plan, property ownership can be shown when this information is available).

3. Survey Travel Routes – Those conducting the windshield survey should select their routes carefully to save time and fuel, make sure that all sites are covered, and guarantee that the entire community is surveyed. Organization is particularly important if more than one survey team is involved in collecting land use information. A base map or aerial photographs can be used to help lay out routes.

4. Land Use Classifications – Land use classifications are usually indicated by symbols and/or a color code. A simplified system like the following one should be adequate for most small communities; suggested symbols and colors are shown for the following list of uses. The planning board or master plan advisory committee should decide on the system to be used before starting the survey.

USE GROUP	INCLUDES	ABBREVIATION	COLOR (with RGB values)	
Residential	Low-density, single-family dwellings	R-LD	Yellow (255, 255, 140)	
Residential	Medium-density, two-family dwellings	R-MD	Orange (255, 127, 0)	
Residential (>3 units)	High-density, multi-family dwellings	R-HD	Brown (137, 122, 68)	
Residential	Mobile homes	RM	Tan (168, 112, 0)	
Agricultural	Land in active agricultural use	A	Olive (152, 230, 0)	
Industrial	Manufacturing, both light and heavy	Ind.	Purple (197, 0, 255)	
Commercial	Retail shops, stores, businesses	C	Red (230, 0, 0)	
Public	Town offices, facilities	Pub.	Blue (0, 197, 255)	
Institutional	Schools, hospitals, churches, cemeteries	Inst.	Dark Blue (0, 92, 230)	
Utilities	Water, sewer, electrical substations	Infas.	Gray (130, 130, 130)	
Recreation	Beaches, playing fields, courts, trails, public parks	Rec.	Green (38, 115, 0)	
Forest	Wooded land areas	F	Light Green (56, 168, 0)	
Open land	Inactive land, not forested or developed	O	White (255, 255, 255)	
Surface water	Lakes, ponds, rivers, streams	W	Light Blue (190,232,255)	

5. The Windshield Survey – Information should be recorded on paper work map prints with a soft lead pencil.

a. In recording land uses, lines should be drawn on the map to show the approximate extent of each use. Locate structures as accurately as possible on the work map, and label sites as to their use with a letter code and/or color. Include directly related, surrounding yard/land area in the same use class.

For example, a single family residence in a rural area should be recorded as a residential use of land approximately one acre in size.

b. Accuracy is important, since preparation of the future land use plan may involve proposals to extend existing uses to adjacent land areas.

c. A USGS topographic map can be very helpful in orientation, as can a highway map, which can be obtained from NH DOT.

6. Road Classifications – While conducting the windshield survey, it is wise to note any new roads that may have been constructed and add them to the base map; names should be corrected as necessary.

7. Recording the Data – When the survey team returns to the office, it should transfer the rough information obtained in the field to a clean paper print. This does not result in the final existing land use map, but in a master work map on which all of the information is accurately recorded for review and checking.

8. Aerial Photographs – Compare field data with aerial photographs, if available. This helps confirm the location of uses identified in the field and allows an inspection of back land and inaccessible areas. More exact boundaries of fields and forested lands can be delineated. Examples of uses that can be confirmed in this manner, by someone with out training in photo interpretation, include the location of active agricultural uses, extensive gravel pit operations, and lumbering activities.

9. Review and Consultation – When all of the information recorded on the master work map has been checked, town officials such as the building inspector and road agent should be given an opportunity to confirm its completeness and accuracy based on their knowledge of the community.

10. Final Map Preparation – Transfer the existing land use information from the master work map to a mylar base map. This is usually done in ink on the mylar surface. Symbols or distinctive shading may be used, allowing the mylar original to be reproduced through photographic copying processes. Paper prints or duplicate mylar sheets can be colored, using markers or pencils, to make the existing land use map more readable and easily understandable. If you have GIS capabilities, this map information can be developed on the computer.

11. Keeping the Existing Land Use Map Up-To-Date – The existing land use map can be maintained in up-to-date condition in several ways. If a building permit system exists in the community, all new structures and improvements will be on record in the building inspector's office. This information can easily be transferred to the existing land use work map or a card system for periodic updating of the map. Other commonly used methods involve conducting an annual or biennial windshield survey and updating from new aerial photographs. Regional planning commissions may be able to provide assistance as well.

### **Land Development Trends**

As part of the development of your land use section, it is important to provide a discussion of the land development trends of your community. To accomplish this, you should include a brief historical review of the growth and development of your community, identifying past and current trends. You should also describe the current land use patterns of your community, noting any areas within your community that have experienced strong growth and development pressures. You should also identify any areas of your community that are not growing or are in a state of decline. You should review the building activity of your community, the number and types of building permits that have been issued, and recent subdivision activity. The aim of this review is to take stock of how your community has grown and developed in the past and where your community's growth is occurring today. Some of the information that would be useful includes

- total number of residential building permits issued by type of dwelling (single-family, two-family, multi-family, and manufactured housing) and number of units and acres for the past ten years
- total number of commercial building permits issued and new commercial units and acres or square footage for the past ten years
- historical comparisons between past and current aerial photos that show the amount of developed and undeveloped land within the community

### Step 3: Data Analysis: Formulate Future Development Scenarios Based on Vision Statements, Community Assessment, and Land Use Maps

When the existing land use map has been completed, it will reveal graphically the pattern of existing uses within your community. In many New Hampshire communities, the pattern is characterized by a town center surrounded by a sparsely populated rural area. This “village pattern” evolved in an era when most families required land for their subsistence and livelihood. The advent of the automobile and shopping center resulted in departures from the traditional village pattern. New patterns emerged that are characterized as “string” or “strip” development, which occurs in a linear fashion along existing roads; “sprawl,” or random development in outlying areas; and “suburban” development, referring to rings of development around a city or village. An examination of the existing land use map may reveal one or more of these patterns in your community.

An evaluation of existing land use should go beyond an observation of the present pattern to address the question of how future growth can best be accommodated. Some of the most important factors in this analysis are transportation networks, community facilities, utilities, regional growth patterns, and compatibility of land uses.

In many communities, road maintenance expenses are a major budget item; the location of future development can have a significant impact on road construction and maintenance expenses. When development occurs in a sprawl-like pattern, the community is faced with upgrading and maintaining many miles of rural road; but when development is concentrated, these expenses are minimized. It is important, as part of your master plan, to examine and classify your community’s roads according to their present condition and function. The existing road network may suggest that certain areas of the community are preferred for growth because they are already served by a good road. On the other hand, a community can sometimes direct growth into an area by upgrading road access.

Other factors that should be considered are the layout of municipal water and sewer lines, the location of new fire and police stations, and other community facilities. Services can be extended to new development more efficiently and economically if development occurs near existing systems and facilities. The location or extension of public services can be used to reinforce the existing land use pattern or to change the pattern. A common method of encouraging a desired pattern of growth is to allow a greater density of development in areas served by municipal water or sewer. If there are no services at present, or if the existing services are being used at capacity, a community may provide new services in areas where it wants to encourage growth.

As part of your analysis, you should utilize your inventory of publicly owned land. Often a community owns more land than is generally recognized. Identifying public land on a map may stimulate suggestions for new uses. For example, if your community is in need of a new town well, it may discover that it already owns land on top of an aquifer. There may be publicly owned waterfront land that has recreational development potential or state forest land that could be used as a park. If a community finds that it owns land for which it has no immediate or foreseeable use, it might consider selling the land and using the proceeds to acquire a more usable parcel. When examined in the context of existing or future uses, publicly owned land may turn out to be an extremely valuable asset.

Regional land use affects the pattern of community land use; development in town often has a direct effect on neighboring towns. You should be aware of and consider these regional trends in conjunction with the regional planning commission. For example, if growth in a town is moving toward a common boundary, it may encourage growth in the neighboring community as well.

Compatibility of uses is an important factor as you consider the location of future development. While it is generally believed that residential, commercial, and other land uses should be separated into different land areas, it is also recognized that, with proper design, a certain amount of integration of land uses is possible and even desirable. In fact, the current ideal is to promote a careful and thoughtful place-

ment of uses throughout the community, with areas of overlapping uses creating natural transitions. The successful mixing of land uses depends on design and compatibility factors and informed, experienced decision makers. For example, a neighborhood convenience store might fit nicely in a residential neighborhood, whereas a shopping center might best be located in another area (see Chapter 11, “Planning Concepts and Themes,” for more information about mixed use development). The master planning process will help you consider a variety of future development possibilities.

You can also use your community assessment, community visioning statements, and land use maps to observe and evaluate the factors influencing the pattern and mix of land uses within your community and then consider whether it is more desirable to reinforce or to attempt to change current trends. For many traditional towns, low-density residential development scattered throughout the community is a desirable land use pattern. For larger cities, compact, high-density residential areas in walking distance to downtown may be a more desirable alternative.

A good way to assess citizens’ preferences is to use their vision statements as a guide to the type of development pattern most desired by the community. For example, one vision statement might recommend that office and institutional development be used as a transitional land use between residential and more intensive land uses. Another vision statement might encourage your municipality to extend water and sewer service to developments that support a compact urban growth pattern. Similarly, a vision statement may encourage new commercial development to locate within a designated urban growth area boundary (see Chapter 11, “Planning Concepts and Themes,” for more information about compact growth and urban growth area boundaries). Once a preferred land use mix and pattern have been established, the process of delineating areas for growth may be undertaken.

Two useful tools that can help you go about the process of designing future development scenarios for your community are a development constraints map and a development opportunities map. Possible future development scenarios can be formulated for

your community by identifying on your development constraints map all the vacant land areas that are not classified as being either a natural hazard or a special environmental feature. These potential buildable areas can then be shown on your development opportunities map.

The resulting development opportunities map provides a visual statement of the options within your community where growth and development could be encouraged. The development constraints map, on the other hand, provides a framework for the development of an open space system and a definitive picture of those areas that are not suitable for future development. It can also be used as a guide when considering individual development requests.

The process of deciding which areas shown on the development opportunities map are preferred for growth is the essence of the planner’s art. There will probably be several areas that relate closely to existing buildings and roads, and there will probably be several potential growth centers in the rural parts of your community. The master plan advisory committee, planning board, or consultant can compare the advantages and disadvantages of each possible growth area.

During this comparison process, frequent reference should be made to your existing land use map. The evaluation process should also take into account all pertinent factors including topography, soil, slope, water resources, access to the area, existing land uses, special environmental features, community facilities, and utilities. You should also consider the realistic land use needs of your community and your vision statements.

In general, growth is preferred in those developable areas that most logically and conveniently relate to existing developed areas and community facilities and services. If possible, growth should be a direct and compatible extension of existing development. Conversely, growth in inaccessible areas is less desirable unless it can be served independently and economically. Your planning board must develop its own methods of making decisions and struggle with alternatives and conflicting opinions and priorities. The areas eventually designated as preferred for

growth will represent what constitutes a desirable development scheme for the future. The preferred development scheme forms the basis for the future land use map.

#### Preparing a Development Constraints Map

The preparation of a development constraints map is quite simple. If you have already prepared a map of environmentally sensitive areas and a map of natural and community hazards, then all you have to do is combine this information on one map and set up a color-code system for each data source. If you have not prepared one or both of those maps, you should refer to the data and map requirements as described in the basic natural resource inventory of this handbook (pages 56 to 57).

#### Preparing a Development Opportunities Map

The preparation of a development opportunities map should be a fairly straight-forward exercise. All you need to do is transfer the vacant developable land areas from your development constraints map onto your development opportunities map and identify them as such. The vacant developable land areas are shown on your development constraints map as all the non-color-coded areas.